



# Biodiversity Conservation Planning Process

## Biodiversity Conservation Committee

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Michigan Department of Natural Resources

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## 1. PURPOSE

The purpose of this document is to describe the process developed by the Biodiversity Conservation Committee (BCC)<sup>1</sup> to establish a network of functional representative Michigan ecosystems on a portion of Michigan Department of Natural Resources (DNR) administered lands. It also establishes a strategy to conserve biological diversity on all DNR administered lands and to cooperate with other landowners, to conserve, restore and protect the biological diversity of Michigan.

The DNR's BCC was formed for the purpose of developing a plan, named the "DNR Biodiversity Conservation Plan", that will ensure the conservation, maintenance and restoration of Michigan's native biodiversity on DNR administered lands. The BCC was challenged to develop a plan which conserves Michigan's biodiversity heritage and legacy while smoothly interfacing with other current and future DNR resource planning and assessment efforts. Furthermore, the BCC was assigned the task of devising a decision-making process which is transparent and responsive to internal agency concerns, as well as key stakeholder groups and citizens.

The DNR will manage lands included in this network with conservation of biological diversity as the primary goal. Key elements to this plan are:

- Establish an organizational infrastructure consisting of multiple design teams who will work at state, eco-regional and local spatial scales.
- Apply the principles of the Biodiversity Conservation Plan consistently throughout the State.
- Select parcels of land for inclusion based on three primary elements as outlined in the Public Advisory Team (PAT) recommendations: 1) ecosystem representation, 2) functionality, and 3) quality and condition.
- Design an integrated public participation process, working cooperatively with individual citizens, conservation and environmental organizations, forest products industry and other state and federal land management agencies.
- Integrate, implement and coordinate with the eco-regional planning process.
- Provide practical and specific guidance for site selection and management that applies the principles of adaptive management.

## 2. BACKGROUND

In 1992, the Governor approved legislation that was then codified as the Biological Diversity Conservation Act. It has now been re-codified as Part 355, 1994 PA 451. This legislation declares that "It is the goal of this state to encourage the lasting conservation of biological diversity." Part 355 directed the legislature to "prepare a recommended state strategy for conservation of biological diversity...." While Michigan's legislature did not follow-up on this directive, the DNR Director declared that the DNR will take "an ecosystem approach to decision-making."

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<sup>1</sup> There were additional committee members who had to leave the committee due to other duties that prevented them from further participation: John Pilon, FMFM; Lee Verberkemoes, Parks and Recreation; Paul Seelbach and Tom Rozich, Fisheries.

In 1995, the Natural Resources Commission (NRC) approved an addendum to the Statewide Forest Resource Plan entitled, "Old Growth and State Forest Lands". Old growth forests were defined as "those that approximate the structure, composition and functions of native forests". In 2001, after several years of effort, the DNR published the report, "Proposed Old Growth and Biodiversity Conservation and Stewardship Planning Process and Draft Criteria for Michigan's State Forests and Other State Owned Lands". This report was reviewed and commented on by a Public Advisory Team (PAT) consisting of various individuals representing conservation, environmental and forest products interests. The DNR staff did not formally serve on this team. However, several staff were present at every meeting to provide administrative support and background information.

The PAT met numerous times over the period of a year. All meetings were facilitated by Michigan State University Extension staff. It issued a 21-page report to the DNR in May 2002. The key recommendation coming from this effort is that the DNR should change the emphasis from conserving or restoring native old growth forested systems to conserving and restoring some portion of the native biological diversity of Michigan by conserving and restoring "functional" representative native ecosystems. "Functional" is defined in the PAT report as, "the ability of a given area to maintain healthy, viable species, communities or ecological systems for a minimum of 100 years, including the ability to respond to natural or human-caused environmental change".

The PAT report (see Appendix A) recommended the use of three guiding principles or elements as the basis the DNR would implement a statewide biodiversity conservation program:

- A. Ecosystem Representation – A statewide biodiversity conservation plan should "contain, to the extent possible, multiple examples of all native species and ecological communities in sufficient number, distribution and quality to ensure their long-term persistence..."
- B. Functionality – An area or landscape designated for biodiversity conservation management should "maintain focal species, communities, systems and supporting ecological processes within their natural ranges of variability".
- C. Quality and Condition – Seek to include those areas having high abundance of rare, threatened or endangered species or natural communities, as well as areas having minimal human impact.

After the PAT issued its report, the DNR established an internal committee known as the BCC. It was composed of representatives from Wildlife, Fisheries, Parks and Recreation and Forest, Mineral and Fire Management. It was charged with:

- A. Reviewing the PAT report and determining which concepts and recommendations could be incorporated into a statewide biodiversity conservation plan.
- B. Determining how biodiversity conservation on DNR administered lands will occur given multiple use management mandates (e.g. social, economic and legislative mandates and demands).

- C. Designing the BCC plan to fit into the existing eco-regional planning team structure and other various resource assessment and management processes (e.g. operations inventory and IFMAP)
- D. Use geographic information system technology and data as the foundation for site selection and overall development of a biodiversity conservation network.

### **3. PROPOSED PLAN**

Appendices B and C provide a framework illustrating the process for selecting parcels (called Biodiversity Stewardship Areas or BSAs) for inclusion in the Biodiversity Conservation network. The BCC proposes an organizational structure to incorporate the current eco-regional team structure. The BCC recommends that three types of teams be created using a hierarchical structure as the basis for these teams. Each team type will have different responsibilities and work at different spatial scales. Please note that for each eco-region, a set of core design teams will be used and the number of core design teams within each eco-region may vary according to the biodiversity conservation needs in that particular eco-region.

The team types are as follows:

- A. The Statewide team – this team will oversee the entire planning process. It has the overarching responsibility to ensure that the selection process is applied consistently throughout the State.
- B. Eco-regional team – There are four eco-regional teams. They are charged with planning and coordinating management of Michigan's natural resources utilizing ecosystem management principles. Their geographic responsibilities are the Southern Lower, Northern Lower, Eastern Upper and Western Upper Peninsulas.
- C. The core design teams – These teams are nested within a given eco-region team. The eco-region team will be responsible for assembling this team using existing DNR field staff. It is this team that will identify and recommend specific sites and parcels of land for inclusion as BSAs in the biodiversity conservation network. This is also the team that will work with local stakeholders about the biodiversity conservation process in identifying candidate sites/communities.

### **4. THE PROCESS**

Biodiversity exists at many levels of biological organization (i.e. genetic, species, communities, ecosystems and landscapes). Biodiversity also occurs at a variety of spatial scales, from a few square feet to millions of acres. The proposed process is based on integrating these biological and spatial relationships to develop a network of sites and management strategies that conserve and restore some portion of Michigan's biological diversity legacy. As such, the biodiversity conservation process is based on the filtering concept in which the process moves from coarse filters (e.g. Michigan Natural Features Inventory natural community types throughout Michigan) to using fine filters (selecting sites from several to hundreds of acres based on knowledge of local ecology and specific knowledge of species location and habitat).

The Statewide team will be responsible for planning for biodiversity conservation at the broadest level (i.e. looking at the entire state of Michigan). As illustrated in the flowchart

in Appendix B, the responsibilities of the Statewide team will occur in the following manner:

- A. The Statewide team identifies the general distribution and quantity of each of the 74 Michigan Natural Features Inventory natural community types which exists now and in the past. This also includes the large task of identifying biophysical data sources and those spatial and tabular analyses that will be needed. The team should strive to identify any significant variations in natural community types.
- B. The Statewide team defines conservation objectives and targets and values for each community type. Key tasks include determining community uniqueness and rarity, threats to the ecological health of a given natural community, and potential for conservation of a given natural community.
- C. Determine and rate the quality, condition and functionality of a natural community over the landscape of Michigan. Also, the team must rate the potential to preserve the quality, condition and functionality of a natural community ecosystem(s) and natural processes over the next century. This will involve defining the importance of various ecological criteria to maintain or restore biodiversity within a natural community and its surrounding landscape.
- D. Identify Statewide social and economic trends, as well as social and economic constraints to conserving biodiversity in any given landscape. This will involve further refinement in the identification of biophysical data requirements.
- E. Provide information, data and direction to the four eco-regional teams to allow the eco-regional teams to move ahead with the biodiversity conservation process. This includes:
  - 1) List of conservation objectives associated with each community type.
  - 2) Checklist of ecological criteria important for each conservation objective.
  - 3) Relevant economic & social data, definitions and profiles.
  - 4) Relevant biophysical data.
  - 5) Suggested list of other planning processes to connect with.
  - 6) Announcements to interested outside groups.

The second phase of this process involves action and decision making by the four eco-regional teams. For each team, the following should occur:

- A. The eco-regional team must identify conservation objectives, targets and values specific to its given eco-region, in addition to the guidance and information provided by the Statewide team. Key tasks include determining community uniqueness and rarity, threats to the ecological health of a given natural community, and potential for preservation and/or restoration of biodiversity and ecology. In addition, an eco-regional team must compare those eco-regional specific conservation objectives with those identified by the Statewide team for a given community type. The eco-regional team will submit these objectives to the Statewide team for their review and comment.
- B. The eco-regional team shall identify regional and local socio-economic data sources that augments and complements Statewide data. This data will be used to examine and analyze constraints that are more local in their impacts on selecting lands for inclusion in the biodiversity conservation plan.

- C. The eco-regional team will also identify any research and documentation that has been developed with respect to criteria and indicators, such as those identified in 1999 for the State Forests located in Eastern Upper Peninsula.
- D. The eco-regional team will designate personnel to serve on a “core” team. The core team will be the key entity responsible for selecting areas using the guidance, information and data developed by the Statewide and eco teams.

## **5. THE CORE TEAM**

This phase of the biodiversity conservation planning process is where specific parcels of land are nominated for inclusion into the biodiversity network. It is at this phase where knowledge and input of local ecological and forest conditions are sought from DNR staff, as well as professional resource management staff from other land management agencies and conservation organizations. Each core team needs to accomplish the following to insure the successful implementation of the DNR biodiversity conservation plan.

- A. Identify specific geographic areas or parcels for inclusion in the network as BSAs. This will involve locating the desired natural communities based on specific conservation objectives. Begin providing information to local stakeholders and identifying participants for selection process.
- B. Determine the spatial arrangement of areas based on the general criteria of ecologic functionality and site quality and condition. Areas and communities will also be selected on their ability to be sustained over a significant period of time (e.g. 100 years) and large enough to conserve the targeted flora and fauna located within.
- C. Review and consider other planning efforts occurring locally on state, federal, and private lands and consider how these efforts will affect or be affected by biodiversity conservation planning.
- D. Review and analyze information compiled in previous steps.
- E. Identify potential sites by working with local stakeholders. The core design teams will list those sites that conform to PAT recommendations and constraints as formulated by eco-regional team.
- F. Within a given locality, prioritize and rank the identified sites as based on how each site best meets all pertinent criteria and conservation objectives.
- G. Assemble all recommendations, rearrange and/or rank as needed for the larger eco-regional landscape, and provide reports to the eco-regional and Statewide teams.

## **6. PUBLIC PARTICIPATION: AWARENESS, INFORMATION & OUTREACH**

Incorporating public participation throughout all phases of this project is essential to ensuring that the outcomes properly reflect the social values that Michigan citizens have with respect to conserving biodiversity on State lands. Therefore, the BCC recommends active public participation on all levels. The following are some examples of this:

### **Statewide Examples:**

- A. Establish/maintain webpage in “Forests, Land & Water” section of DNR website that lists the history, timeline, supporting documentation and latest happenings. Provide on-line connection to offer comments on the process, including a running summary of all comments for on-line visitors to view.
- B. Maintain electronic listserv that also provides opportunities for on-line comments and announcements.
- C. Update list of organizations and agencies (statewide, regional, and local) who are potentially interested in the Biodiversity Conservation process. Provide executive summary and future intentions to these groups.
- D. Develop a “canned” presentation of the Biodiversity Conservation process that can be offered at organizational and agency functions.
- E. Discuss products as identified in Appendix C, item 1d (e.g. conservation objectives list, ecological criteria checklists), with the Public Advisory Team.

### **Eco-team Level Examples:**

- A. Update and maintain list of regional organizations and individuals who are interested in the Biodiversity Conservation process.
- B. Modify “canned” presentation to fit regional needs, delivering it to local or regional organizational events.
- C. Include findings, changes, and recommended Biodiversity sites in compartment reviews and open houses.

### **Core Design Team Examples:**

- A. Use list of interested groups and individuals, identified by eco-regional teams, to provide information about the candidate site selection process. Provide a mechanism for comments, feedback, etc.
- B. Contact interested stakeholders again when candidate State and non-State-managed sites have been identified, including participants in the site selection process using workshops or other interactive techniques.
- C. Use core design team results and local input to select recommended sites. Provide recommended site information to all interested stakeholders for comment and feedback. Note: There is an iterative aspect to this portion of the process where recommended sites are reviewed and adjustments considered at least once (depending on the situation) with stakeholders. At the same time, the core team should not fall into an endless review loop.

## **7. RESOURCES REQUIRED FOR PLAN IMPLEMENTATION**

Implementation of a plan of this magnitude will require a significant commitment by the DNR. With respect to biodiversity conservation planning, an endeavor of this magnitude has not been done by any state natural resources agency within the Midwest for lands that it administers. A clear lack of data and information exists with respect to the location and quality of natural communities on State Forest lands.

To implement this plan, the following actions are required by the DNR:

- A. Establish a partnership with the Michigan Natural Features Inventory to inventory State Forest lands to determine the location, quality and condition of the 74 possible natural communities found in Michigan.
- B. Create a Statewide team.
- C. Create a set of core design teams that will operate within each eco-region respectively.
- D. Set up a training program for field staff.
- E. Appoint or hire a staff person responsible for ensuring that the DNR is implementing the plan in a timely manner and who will serve as the point person for ensuring that information is exchanged properly and thoroughly between the teams, DNR management, field staff and interested stakeholders.

Implementing this plan requires the DNR to apply the principles of adaptive management whereby the following should occur:

- A. Management recommendations for selected sites will need to be identified and integrated with other existing inventory processes.
- B. A system of lands is selected for its contribution to conserving various elements of Michigan's biodiversity heritage.
- C. Site specific management for maintenance and restoration of biodiversity elements and ecological function.
- D. Monitor and document how management actions meet conservation objectives for a given site and for the overall biodiversity network of lands.
- E. A process and procedures for adding or deleting parcels of land in the established network.

Committing the resources to implementing the proposed Biodiversity Conservation plan as proposed represents a bold step by the DNR to conserve Michigan's biodiversity heritage while maintaining its commitment to the multiple use of State Forest and other State-owned lands.

Finally, the BCC recognizes that integrating aquatic systems in the biodiversity conservation process is important. However, given the magnitude of scope and workload in addressing terrestrial ecosystems, the committee focused its initial efforts on terrestrial ecosystems.

# APPENDIX A - PUBLIC ADVISORY TEAM (PAT) RECOMMENDATIONS AND COMMENTS ON OLD GROWTH/BIODIVERSITY STEWARDSHIP (OG/BS) REPORT

## INTRODUCTION

The PAT was convened and asked to comment on the Michigan Department of Natural Resources' (MDNR) OG/BS Report dated February 8, 2001. This document includes comments and recommendations for the MDNR to consider as they continue in the OG/BS planning process. The concepts in this document should be considered in their entirety; they are intricately connected and complex.

The PAT strongly recommends that:

- This document be technically reviewed and include supporting documentation (citations).
- Staff be trained appropriately.
- All State-owned land (recreation areas, state parks, game areas) and other land ownership be considered for their contributions to OG/BS goals.
- The MDNR clearly understands and is able to communicate the concepts and goals of the OG/BS process to internal and external groups.
- Consideration is given to re-naming the OG/BS process to better reflect the objectives stated in the goal statement (below).

**The goal of the OG/BS program is to represent, in a functional condition, native Michigan ecosystems on a portion of State-owned lands, in cooperation with other landowners, to conserve, restore, and protect the biological diversity of Michigan.**

To implement the OG/BS goal, the PAT envisions that the MDNR will use the combination of three elements: **Ecosystem Representation, Functionality, and Quality and Condition**. Each of these elements has criteria and considerations that specify the parameters and gives explanation of the elements. The MDNR will use this system to design conservation areas that meet the OG/BS goal.

## ECOSYSTEM REPRESENTATION

Representation is "a principle ... referring to the capture of the full spectrum of biological and environmental variation within a network of reserves or conservation sites, including all gene pools, species, communities, ecosystems, habitats, and landscapes" (Designing a Geography of Hope, The Nature Conservancy, 2000). The scope of this definition extends from the most distinctive of biological entities (gene pools) to the broadest of ecological units (ecosystems). As such, it covers both the "fine filter" and "coarse filter" ends of the conservation spectrum. For the OG/BS process, "ecosystem representation" refers to the degree to which the native ecosystems (LTAs or ELUs) are represented in functional landscapes within each subsection.

Overall, the OG/BS design should contain, to the extent possible, multiple examples of all native species and ecological communities in sufficient number, distribution, and quality to ensure their long-term persistence within the State of Michigan. Taking a coarse filter approach assumes that if the coarse filter components of biodiversity are captured, the fine filter components will also be captured. It also makes the design and implementation of the process a great deal simpler, as the information on the different types and locations of ecosystems is more readily available than information on natural communities and species. However, the validity of the assumption depends on the level of resolution of the classification of native ecosystems and the inherent variation within the different types. For example, LTAs defined at a broad level of the classification may contain very different types of local ecosystems and natural communities.

So, to the extent that some LTAs are more internally variable than others, representation of those LTAs in the design should be evaluated for how well the internal variation is captured. Because there is no comprehensive list or map of the natural communities and species that occur in the native ecosystems, no numeric guidelines can be recommended. But, as a general principle, those native ecosystems with high variation may need to be conserved in a greater number of sites and with a greater degree of geographic stratification than those types with less variation.

Modified from the guidelines used by The Nature Conservancy, the criteria for representation (number per subsection) are set based on the spatial pattern, and geographic distribution and appear in the table below. See the Glossary for definitions of specific classes of spatial pattern and geographic distribution.




#### Criteria:

- 1) Represent the LTA or ELU in OG/BS areas the number of times recommended in the table below:

Distribution		Geographic Scale and Spatial Pattern		
		Matrix Forming	Large Patch*	Small Patch*
	Restricted/Endemic	At least 1	3	5
	Limited	At least 1	3	5
	Widespread	At least 1	2	3

\* These figures are to serve as a demonstration of proportionality, not exact numeric requirements.


#### Considerations:


-  *The design should contain multiple examples of all conservation targets in sufficient number, distribution, and quality to ensure their long-term persistence within the State of Michigan.*
-  *As a general principle, those communities with high variation may need to be conserved in a greater number of sites and with a greater degree of geographic stratification than those types with less variation.*
-  *Since the UP does not have mapped units at the same scale as the LP, the design teams should map ELUs that are roughly equivalent to those of the LP, if possible. If this is not possible, use sources already available in the MDNR. Use common LTAs, if available in the near future. If not, use existing LTAs, with representation by common landform feature, i.e. moraine, outwash plain, embayment, etc. Review to see if you have missed any important features (see subsequent sections), rely on field staff and local knowledge for this information.*

### **FUNCTIONALITY**

A functional conservation area maintains the focal species, communities, and/or systems, and their supporting ecological processes within their natural ranges of variability (The Nature Conservancy).

#### Considerations:

 *To maintain viable systems, context and connectivity should be considered where they can enhance the viability of small or rare ecological systems.*

 *The importance of these elements and criteria will vary with the conservation targets and goals.*


*For Example:*


- *Size is most important for matrix forming communities and wide ranging species.*
- *Landscape context and connectivity will be important for smaller patch communities (vernal pools, Canada yew hardwoods) and dispersal-dominated species populations (small mammals, amphibians).*
- *Continuous cover will be most important for forest interior species and fire dependant communities.*
- *One characteristic may compensate for another.*
- *More internal fragmentation may be acceptable in larger conservation areas.*


### **Landscape Context Criteria:**

- 1) Choose a landscape context in which the function of the potential OG/BS area is not significantly impaired.


*Considerations:*


 *Nesting—select sites in which large and small patch communities are nested within the larger matrix.*

 *Proximity—when possible, select areas that have clusters of small patches near each other as opposed to those that are farther apart.*

 *Look at the surrounding landscape and determine if the values for which a proposed potential OG/BS area has been selected are significantly impaired by the context in which it occurs.*

- *For example, a small isolated block of old trees surrounded by habitats or conditions unsuitable for the conservation targets (i.e., gas wells and roads) may not be a functional old growth system.*
- *On the other hand, if the surrounding lands can be restored over time, then these currently isolated blocks may be a better choice than another area with less fragmentation but dominated by younger stands where natural composition and structure is less well developed.*






 *The current or projected future activities in the surrounding area should be evaluated relative to the long-term viability of the species or community of concern. The requirements of the individual species, species association or community of concern should determine what adjacent activities are compatible and appropriate.*

 *Context includes looking at areas in other ownerships: OG/BS should assess the ability to complement other protected areas and how these areas achieve some of those requirements for conservation targets over the long term.*

### **Block Size Criteria:**

- 1) The size of OG/BS areas, or complexes of these areas, should be reflective of target species' home ranges, and life history needs.
- 2) The blocks are of sufficient size and/or distribution to allow the ecological targets to persist, or recover from, disturbances characteristic of the site.










*Considerations:*

-  *Consider the risk of loss due to catastrophic events to a single unique large block.*
-  *Larger blocks are more functionally intact and are less common than smaller blocks, and therefore are preferred.*
-  *Complexes (of blocks) with connectivity can be considered when addressing the size question.*
-  *Look for opportunities to increase representation within OG/BS areas by designing them so they cross ecological boundaries.*
-  *Size should consider these factors:*
  - i. *Energy capture*
  - ii. *Reproduction*
  - iii. *Genetic mixing*
  - iv. *Refugia*
  - v. *Migration*
  - vi. *And other spatial life history needs*

**Connectivity Criteria:**

- 1) The connectivity of the system should be determined based on the use requirements for the species of concern in that area.

*Considerations:*

-  *Connectivity is to be developed through large-scale landscape-level considerations.*
-  *OG/BS lands that are connected or in proximity to other natural habitat are preferred to isolated areas surrounded by a human-dominated matrix.*
-  *Connectivity is not just about corridors. Connectivity can be accomplished by:*
  - *Corridors*
  - *Proximity*
  - *Or surrounding land use conditions that are compatible with conservation targets.*
-  *In some cases, connectivity may be discontinuous as long as there are “stepping stones” for the target species.*
-  *Connectivity along waterways is especially useful because of the many ecological values riparian areas provide.*
-  *Biodiversity may be enhanced when wetlands are linked to uplands.*
-  *Connections should not exclusively be riparian or upland. Both are important.*
-  *Connectivity is especially important between small patch communities. They may need the surrounding matrix to persist.*
-  *Important questions regarding the connectivity of the OG/BS:*

*Do target species have access to all habitats and resources needed to complete their life*

*cycles? (scale: OG/BS area)*

*Are all spatial needs for energy capture, reproduction, genetic mixing, refugia, migration, and so forth met for the conservation targets of the OGBS? (scale: OG/BS area)*

*Will the connectivity enhance the resiliency of the target species? (scale: OG/BS area)*

*Changes in ecological systems and communities are an ongoing process, but evidence suggests that the current climatic changes, coupled with changes in land use, create additional threats to biodiversity that could be partly abated through establishing connectivity (see discussion of the issue of climate change in Appendix B). Specifically, can species migrate or disperse among natural areas (statewide issue)? And, can ecological systems and communities adapt to environmental changes such as climate change (local area issue)?*



*Non-OG/BS designated lands, may provide connectivity. Management prescriptions and objectives that will sustain connectivity should be identified and promoted over the long-term.*

## **QUALITY AND CONDITION**

Quality of an OG/BS conservation area is a subjective assessment that refers to an area's potential for meeting the overall goals of the program. It is at this point in the OG/BS process that emphasis should be given to the rare and unique elements of Michigan's native flora and fauna. Rare and unique species, species associations and communities contribute disproportionately to the biodiversity of the State and require attention within the OG/BS conservation area network.

The condition of a proposed conservation area references the degree to which current composition, structure and on-going processes contribute to the viability of the conservation targets. Evidence of biological legacy and historical continuity are indicators of good condition, whereas significant anthropogenic disturbance, drastic shifts in land use, species and structural simplification, and presence of invasive species, may indicate conditions that would jeopardize the long-term viability of the conservation targets.

### **Criteria:**

Give preference to:





- 1) Those areas that have unique species, species associations and communities.
- 2) Older rather than younger stands in ecosystems where conservation targets, at the species or communities level, are dependent on late successional features and processes.
- 3) Those places within LTAs that most closely represent what is understood as a natural system (composition, structure and condition).
- 4) Areas with the greatest evidence of a) biological legacies or b) historic continuity.

*Considerations:*





*Rare and unique species:*



*The future management of OG/BS areas should be tailored to the needs of the rare species or community, where such management is critical to their continued persistence.*

-  *A shifting mosaic of successional stages in an OG/BS area should be managed to the benefit of the species, species associations, or community (the conservation targets) that initially drove the designation decision.*
-  *The level of disturbance in OG/BS blocks should, to the extent possible, reflect the natural disturbance regime native to the area. If this disturbance regime has been altered by management actions, or the current landscape structure (roads, housing developments etc.) inhibits ecological regimes, then active restoration management may be needed to maintain conservation targets within the area, especially for rare or unique species or communities.*
-  *These native conditions in many cases include early successional stages of vegetation, frequent disturbance regimes or other processes and features.*
-  *Specific knowledge of MDNR staff or other local individuals and organizations should be utilized in locating and mapping these sites.*

*Time since last disturbance, and biological legacies:*

-  *The structure and composition of an ecosystem is a key determining factor for the presence of species and the associated processes that sustain them.*
-  *Information about the time since the last disturbance, and the intensity/severity of that disturbance can help with the initial selection of candidate sites.*
-  *Examples of biological legacies may be, but not limited to:*
  - a. *dead and rotten wood*
  - b. *standing snags*
  - c. *seed banks and residual organisms*
  - d. *soil nutrient pools*
  - e. *reservoir of soil organic matter*
  - f. *seed banks*
  - g. *intact nutrient cycles*
  - h. *a well-developed moss, lichens, herbaceous understory*
  - i. *structural complexity in canopy and understory*
  - j. *fungi, decomposers, and predators*
-  *Specific knowledge of MDNR staff or other individuals and organizations should be utilized, in locating and mapping sites with biological legacies and areas with less anthropogenic disturbance.*

## APPENDIX A

### **Additional Information and Background Material on Landtype Associations**

#### **What is a Landtype Association?**

Landtype Associations (LTAs) are areas defined by multiple biological and physical factors, including landform, topography, soil, and vegetation (Minnesota Department of Natural Resources, 2000). They can be hundreds to thousands of acres in size. They are part of a national system of ecological land units, comprising eight different scale classes that allow scientists and managers to consider ecological patterns at any scale. LTAs have been identified, classified, and mapped for the Great Lake States (excepting southern Lower Michigan), and the information about LTAs is available on the website of the Great Lakes Ecological Assessment (<http://www.ncrs.fs.fed.us/gla/>).

In Michigan, the system of ecological land units at broader scales than LTAs has been delineated by Dennis Albert of the Michigan Natural Features Inventory (MNFI) (Albert 1996). There are three levels of land units: Sections, Subsections, and Sub-subsections, with each subsequently smaller level being nested within the larger units of the level above. LTAs represent the next smaller scale of ecological land unit below the Subsection or Sub-subsection (hereafter referred to, for simplicity's sake, simply as Subsections).

LTAs have been mapped in the Northern Lower Peninsula (MNFI, 1999) and the Upper Peninsula (UP) through integration of the factors mentioned above: climate, soil, topography, and vegetation. In the Northern Lower Peninsula, MNFI classified and mapped LTAs in a nested, hierarchical structure, so that LTAs can be easily grouped by factors such as major landform, soil type, or soil drainage class depending on the level of resolution desired by the user. These LTAs occur multiple times within a Subsection and with the information provided in the LTA reports, it is fairly straightforward to characterize a Subsection in terms of the different kinds of LTAs that occur, the spatial scale of each LTA (i.e., how large it is), the number of times each LTA occurs, and the geographic distribution of each LTA. Knowing these characteristics allows planners to set numeric criteria for representing different types of native ecosystems. In the UP, LTAs have been classified and mapped somewhat differently, with each LTA being large and unique. These LTAs are also nested within an ecological hierarchy, but are different in that each LTA is given a unique number. To assign equivalent criteria for representation for both the Northern Lower Peninsula and the Upper Peninsula will require that the LTAs be grouped by some like factor, such as major landform type.

## APPENDIX B

### Relevance of Climate Change to the OG/BS Design Process

Climate change could have a significant impact on biodiversity. In the upper Great Lakes region, as in other glaciated regions, climatic changes have been a constant reality as glaciers advanced and receded during glacial and interglacial cycles. Plants and animals have had to both disperse in response to these climatic changes and adapt to newly-created landforms and soils. It is widely accepted that the composition of natural communities has not remained constant but has been continually changing as species disperse and expand or contract their ranges at differing rates. So, the climatic changes that we are experiencing now should be expected to result in different plant and animal communities in ecosystems of Michigan.

As we compare the current climatic changes to past ones, two important differences are apparent, both of which have bearing on biological diversity. First, the climate is warming and is expected to continue to warm. Second, the ecoregions through which plants and animals will need to disperse or migrate are far less hospitable and traversable due to the drastic changes wrought by human activities. The combined effects of these two factors could result in greater rates of extinction than might have occurred in the past.

These factors should be considered in the OG/BS design with respect to two of the design criteria, representation and connectivity.

- Representation of ecological systems within a particular OG/BS area should be maximized to better enable ecological systems to adapt to changes (e.g., changes in groundwater hydrology in response to changes in precipitation and temperature). **This consideration applies at the local scale.**
- Connectivity among OG/BS areas throughout the State should provide, to the extent possible, for movement and dispersal of animals and plants. Due to the high variation among species with regard to requirements for dispersal and migration, no general recommendation applies. **This consideration applies at the State-wide scale.**

## APPENDIX C

### Compiled Comments on OGBS Report (Appendix F)

*Note: Acronyms at the beginning of each item indicate the source of the text. SC=Sierra Club; RGS=Ruffed Grouse Society; MFPC=Michigan Forest Products Council; TU=Trout Unlimited; MAT=Michigan Association of Timbermen*

#### Opening Statement

SC-- Site-specific guidance will be created during the designation of OG/BS areas. [We think this type of statement is critical to have as part of the OG/BS process. If not stated here, we should include it somewhere in the PAT's recommendations to the State]

MFPC—I would recommend the OG/BS process include a written justification and rationale for candidate sites. Once sites are accepted into the OG/BS network, short-term and long-term objectives and a written management plan should be prepared. I believe this would meet the Sierra Club's desires for "specific guidance". The written plan should also have a monitoring provision and some periodic measure of progress.

The issue of selection, evaluation for inclusion, planning, and management guidance should be addressed in the body of the document.

#### 1. Timber Harvest and Silvicultural Work

RGS--Timber harvesting and silvicultural work should be used as much or as little as necessary to achieve the goals as set by the conservation target for that specific OG/BS area.

MFPC--the restriction on "active management" is not appropriate. As we have repeatedly discussed, not all biodiversity reserves to be designated in the OG/BS Planning Process are old growth; in fact, many are early-successional. This wording precludes the State from performing "active management" to retain that condition. Overstory removal in alvar or remnant prairie communities, eradication of exotic species by mechanical or chemical means, or even controlled burning, would not be allowed under this wording.

TU--I have a concern with exclusion of active management areas from consideration. I feel any area should be considered in the assessment for inclusion into the OG/BS selection process. I also find some designated areas may require "active management" to allow them to conform/establish to certain community types if included into an OG/BS area.

MAT-- Active management should not be prohibited from any of this process, except where it comes in violation of the State's BMPs. There may be occasions where the choice to preclude active management may come into play, but the choice must come from the managers who are actually making the choices in the field.

SC-- All active management will leave all biomass on site, except in the rare ecological systems (ex. some prairies) that were naturally devoid of large woody biomass, or where public safety requires some removal... We will only support active management that is clearly needed based on the best science, and where the current management and/or condition of the landscape have altered the natural processes of the system (roads, fields, fire suppression, etc.). Removal of large woody debris would, in most cases such as hardwoods, cedar or White/Red Pine, be the last thing we should consider doing. These systems have lost a generation of recruitment of large woody debris; no more should be taken out of them. We all need to remember that this

OG/BS system is about recovering native habitat, and that large woody structures are one type of habitat that has been greatly reduced in our forests.

Managed old growth is not how we see the OG/BS system's mission. The rest of the State Forest system can be managed to meet the needs for products and for actively managed habitat conditions. The OG/BS system should be about 100% reinvestment of biomass, a very rare attribute of ecosystems in Michigan in the last 150 years, but a very common attribute in these systems in the previous 10,000.

We would like clear language that limits active management to where it is scientifically justified, while making it clear that some active management will be needed. It does not have to be our language above but should be similarly limiting in the extraction of biomass from the system. Most of the systems needing active management would be fire driven systems, and large woody debris is not a fire hazard and is exactly what is missing in most fire systems, a legacy of large living and dead trees.

MFPC—Comments on this guideline raise a basic question that I believe the PAT has not clearly addressed. Is the focus of the OG/BS going to be species, communities and the supporting processes? If it is, management that does not impact the focal species or community could be included in the management plan for the specific reserve.

Does the DNR and PAT view the OG/BS as set-asides from active management? Are adaptive management efforts acceptable in OG/BS reserves?

## 2. Oil, Gas & Minerals

RGS--Long term goals and how a parcel fits into all designation criteria should take priority over whether an area is or may be used for mineral extraction. I would recommend removing the second paragraph or adding (If mineral extraction operations negatively impact the conservation targets for that OG/BS area).

MFPC-- The **Oil, Gas and Mineral** lease section makes sense. The existence of the lease may limit the opportunities to apply adaptive management or may some day disrupt progress made toward the desired future condition of the OG/BS designation. Modifying the terms of the lease should also be considered in addition to the "reclassification as non-leasable" option.

MAT-- My only concern here is that the leases that are current will not be in danger of being terminated until the leasee has no further use for the lease.

## 3. Microwave Towers

RGS-- [I agree that] this category should be expanded beyond microwave towers; However, I suggest eliminating all but items 1 and 2 in the narrative. These points cover the biological factors that should be used to determine the impact of such towers on OG/BS areas. While there is some evidence that migrating birds collide with towers, this is true no matter where towers are and this concern is not specific to OG/BS areas.

MFPC-- The section on **Microwave Towers** is a good model for the other listed activities. This section retains a focus on the species' needs and the original species or community goals that prompted the OG/BS designation. The specific impact on migrating birds however is not necessary.

TU-- This is too specific. It should not just be about microwave towers. We are working on a document for the future -- A future of unknowns. I believe this section should be re-written to be

more general to dis-allow the construction of any non-natural (man-made) occurring structures within the limits of the designated areas.

MAT-- I do not have much of a problem with this section, except for the migrating birds statement. I see the presence of Microwave towers as having very little impact on the population of neotropical song birds.

SC-- Please note that once a parcel or portion of that parcel has been approved for OG/BS designation, the manager or other staff should seek to get the parcel reclassified as nonleasable or non-development land. [also suggested removing text referring to impact on migrating bird species-gp]

#### **4. Roads and Motorized Trails**

RGS-- [My feeling is that] the OG/BS plan is attempting to designate areas based on specific biological needs. Roads and noise issues are more social considerations. These areas may be designated through other programs (such as wilderness areas). Roads should be evaluated with respect to their impact on the conservation targets.

MFPC-- ...enters into a long discussion of the additional values humans associate with old growth: "free of noise," "solitude and wild beauty." This seems out of place in a biological or ecological selection criteria or management strategy focused on conservation of species, communities or ecological process. There are several vegetation community types that warrant designation but would not be impacted by noise. Wording comparable to that used in the **Non-Motorized Trails** and **State Forest Campgrounds** discussion would be more appropriate.

TU-- I would like to see this section broaden, as above, to include any vehicles or devices requiring circulation ways greater in impact than natural large game trails. Also see John Johnson's issue about "noise".

MAT-- I like the statement on old growth not being synonymous with wilderness. I think in some cases these old growth areas will look nothing like the typical association with old growth. Again, the sound levels, and ancillary factors should be left up to the managers to determine whether these factors will affect the target species.

SC-- No new roads should be built in OG/BS designated lands.

#### **5. Non-Motorized Trails**

RGS--Same as #4 (Roads should be evaluated with respect to their impact on the conservation targets)

#### **6. State Forest Campgrounds**

RGS--State Forest Campgrounds should be evaluated for their ability to provide for the specific goals of the OG/BS areas. Again, the priority should be given to the biological contributions these areas can provide. If those needs can be met in areas with higher human use, they should be included. Creating buffers or corridors around highly used areas may be helpful if the area provides biological benefits that may be negatively impacted by recreational use.

#### **7. Kirtland's Warbler Management Units**

RGS--It seems that KW areas are managed already to provide for biodiversity. It is a perfect example of areas that must be intensively managed to maintain biodiversity in the State. If this

plan is an OG/BS plan, KW could be included with no conflict and management would continue as it has in the past. This is an example of the need to show how OG/BS fits into our current management practices and designations.

MFPC-- If the appropriate revisions are made in the section on **Timber Harvest and Silvicultural Work** (see comments above), there would be no need to include the section on **Kirtland's Warbler Management Units**. In fact, the Kirtland's Warbler Management plan would serve as an example of appropriate "active management" in a designated OG/BS area.

TU--I agree with John Johnson's previous comments, placing this into 1).

## **8. Designated or Proposed Natural Areas**

MFPC-- The sections on **Proposed Natural Areas and Adjacent Areas** seem appropriate. The note referencing "non-motorized uses of motorized vehicles" should be corrected (interesting idea) or dropped entirely from the section. I also recommend that in the last sentence the word "integrity" be changed to "objective." Appropriate management to protect or enhance biological "integrity" is a subjective assessment that cannot be measured and consequently will be constantly appealed.

SC--Here and in other protected areas classifications, we need to consider if OG/BS designation is needed to add protection of these areas so they help meet conservation targets. If not, then they can enhance the system, but do not need the additional protection of formal designation. In other words, if we have limited acres of OG/BS that will be designated, then priority should go to adding protection to other more threatened acres, and not to protecting the protected.

We need to differentiate between OG/BS designated lands and other lands that contribute to the system but are not officially designated. These other lands would include TNC preserves, other private lands managed for biodiversity, National Forest lands, National Wildlife Refuges, National Parks, and State owned lands already having the needed level of protection to contribute to the system but not needing the additional protection of OG/BS designation.

## **9. Areas Adjacent to or Near Natural Areas**

RGS--This section is probably unnecessary. We have commented on block size and connectivity. Examination of areas near natural areas, wilderness areas, State parks, National Forest areas, etc., make sense to provide for size and connectivity issues. This connectivity issue again relates to conservation targets. Connectivity for KW or other early successional species is different from those that use mature timber. Connectivity and the use of Natural Areas depend on the goals of that area.

## **10. Stands Identified in OI Operations Inventory (OI) as Having Special Management Area Potential (SMAP)**

## **11. Deeryards, Forest Openings and Other Areas Having High Game Management Value**

RGS--While in general I support the idea that "game" management areas should not be included in the OG/BS plan, I am not sure I agree with why. As we developed the OG/BS plan, we discussed, and are using, conservation targets to evaluate OG/BS success. Management traditionally viewed as game management accomplishes the same thing. Management to benefit specific game species also provides important habitat for a wide range of nongame species. In addition, game species are just as important as components of biodiversity as are

nongame species. Perhaps the species' goals that can be accomplished without OG/BS designation are not the priority for OG/BS. The plan does not state this well, if at all. I think that most areas with a high priority for game management should remain outside the OG/BS plan to ensure that management activities will continue, but these areas should also be evaluated for their contribution to overall biodiversity on State lands. I think the 5 sub items listed help to assess how these areas may be considered for inclusion and it will depend on the overall goals for that portion of State property as well as how the area fits into the current management regime and how the area fits into the goals of OG/BS inclusion on a site-by-site basis.

MFPC-- I think the section on exclusion of **Game Management** units is inappropriate. There may be certain conditions such as severe browse impact or intentional non-native vegetation management that would disqualify an area from inclusion. However, there are several game management areas such as state and federal waterfowl refuge areas that would be totally appropriate for inclusion or at least considered part of the OG/BS network.

TU--I feel if an existing game management area has potential to be an OG/BS area, or enhance an adjacent OG/BS area, it should be included, but removed from the management regime if incompatible with the OG/BS area it is being placed into. This would be a special case-by-case call.

## **12. Military Lands**

RGS--Military lands should receive the same consideration as other areas and go through the same process. They may be able to fit the biological needs of an OG/BS area.

TU-- If a designated parcel is internal to these military lands, special efforts should be made to educate the military towards revising their policy towards use of a specific designated area and adjacent property to allow proper protections to be maintained.

SC-- In areas where the Military lands are critical to the OG/BS design, managers should consider beginning a process to address how a designation can take place. [Across the country some Military reserves function as important habitat areas, Michigan should be no exception.]

## **13. Cultural Resources**

## **14. Utility Rights-of-Way**

## **15. Proximity to Private Lands**

MFPC-- ...there should be some consideration given to the needs of the species, species association or community of concern. Early successional forest adjacent to OG/BS may be totally appropriate or even desirable for certain species associations.

## **16. Non-Forested Wetlands**

RGS--If these areas are rare or meet specified goals, they should be included. Management needs to be an option here as on other sites. The 5 considerations listed are very similar to discussions we have had on the overall OG/BS plan. It probably does not need to be included here again.

SC-- [Non-Forested should include more than just wetlands-gp] ...savannas, prairies and other non-forested lands...coastal marshes, oak/pine savanna, emergent prairies, etc...

## **17. Natural Rivers**

TU-- As in the National Forest areas, access should be granted to allow stream restoration projects to obtain natural occurring materials for re-establishment of large woody debris structures, whole trees, etc. I feel the National Forest verbiage covers this, if it could be incorporated into the final documents.

SC-- If a NRP area is being considered for inclusion to provide connectivity and the goals and objectives of the NRP area are sufficient to meet the needs of conservation targets for connectivity, then the area may not need designation, and therefore more restricted landuse guidelines. It would function to enhance the system without further restricting management. Some NRP areas may need further management restrictions and should then be considered for designation.

## **18. Riparian Corridors, Watersheds and Aquatic Habitat Protection**

RGS--Riparian areas have value to both old growth and biodiversity. Biodiversity in riparian areas are also dependent on the full range of conditions including disturbed areas. The added values associated with riparian management do not extend only to those species that utilize mature forest communities. Many early successional species utilize early successional habitat in riparian areas -- Woodcock are a prime example. Designation of riparian areas should receive the same evaluation as upland areas. Natural Rivers areas are already set aside as receiving special consideration, there is no need to give riparian areas yet another level of priority for designation. If the OG/BS plan sets out to maintain biodiversity through selecting specific conservation targets and meeting those goals, the selection of riparian areas will be accomplished by way of the specific needs of those targets.

TU-- As in 18 [17-gp] above.

## **19. The Natural Rivers Program**

RGS--Same category as 17, remove.

SC--remove

## GLOSSARY

**Natural** – not a static or discrete concept, doesn't preclude human activities in native systems, but it does emphasize a degree to which native systems function without regular human intervention (originally from TNC).

**Functional** – The ability of an OGBS area to maintain healthy, viable species, community or ecological systems, the conservation targets, over the long term (100+ years), including the ability to respond to natural or human-caused environmental change. (*Based on "function" — natural or proper action for which an organism or habitat or behavior has evolved*)

**Biodiversity Stewardship** – Management that protects, conserves, restores or mimics natural patterns, structure, species composition and processes within or among ecosystems in an area.

**Native ecosystems** – LTAs or other ecological units (such as ELU's) within an eco-regional subsection or sub-subsection, characterized by terrestrial and aquatic ecological systems within their natural range of variability.

**Native** - Those species and communities that were not introduced accidentally or purposefully by people but that are found naturally in an area. Native communities are those characterized by native species and maintained by natural processes. Native includes both endemic and indigenous species.  
(Designing a Geography of Hope, TNC)

**Natural range of variability** – The amount of fluctuation expected under minimal or no influence from human activities over time frames relevant to conservation planning and management (years to millennia).  
(Designing a Geography of Hope, TNC)

Note: this definition is intended as a sideboard for conservation target ranges, it is not intended to exclude human activities as a natural part of ecosystems.

**LTA (Landtype associations)** - are an intermediate level in the national hierarchy of ecoregional land classification. LTAs are delineated based upon similarities in glacial landform, gross soil texture and drainage classes, and natural overstory vegetation types. (Corner, Albert 1998).

**ELU (Ecological Land Unit)** - Similar to LTA, but defined mostly using broad scale information. ELU's are derived using readily available digital spatial data sets such as digital elevation models, surficial geology, and hydrography and are defined as combinations of several environmental variables. Biophysical or environmental analyses such as (ELUs) combined with land cover types and satellite imagery can be useful tools for predicting locations of communities or ecological systems when such information is lacking, and capturing ecological variation based upon environmental factors. (Designing a Geography of Hope, TNC)

**Representation** - A principle of reserve selection and design referring to the capture of the full spectrum of biological and environmental variation within a network of reserves or conservation sites, including all genotypes, species, communities, ecosystems, habitats, and landscapes. Goals for representation (number per subsection) are set based on the spatial scale (matrix, large patch, or small patch) and geographic distribution (endemic/restricted, limited, or widespread). (Designing a Geography of Hope, TNC) (See appendix A for more details)

**Distribution** – The geographic range of occurrence of a community or ecological system relative to an ecoregion or subsection. To set a goal for how many examples of each

conservation target, group communities and systems into categories based on their relative endemism to the ecoregion:

**Restricted/endemic:** occurs primarily in one ecoregion or subsection.

**Limited:** occurs in the ecoregion and a few other adjacent ecoregions.

**Widespread:** widely distributed in several to many ecoregions.

**Spatial Pattern** – The distribution and extent of landscape features. See below for examples of spatial patterns used in this document.

**Matrix-forming or matrix communities** - Communities that form extensive and contiguous cover may be categorized as matrix (or matrix-forming) community types. Matrix communities occur on the most extensive landforms and typically have wide ecological tolerances. They may be characterized by a complex mosaic of successional stages resulting from characteristic disturbance processes (e.g. northern hardwood-conifer forests). Individual occurrences of the matrix type typically range in size from 2000 to 500,000 hectares (4,942 to 1,235,000 acres). In a typical ecoregion, the aggregate of all matrix communities covers, or historically covered, as much as 75-80% of the natural vegetation of the ecoregion. Matrix community types are often influenced by large-scale processes (e.g. climate patterns, fire) and are important habitat for wide-ranging or large area dependent fauna, such as large herbivores or birds.  
(Designing a Geography of Hope, TNC)

**Patch community** - Communities nested within matrix communities and maintained primarily by specific environmental features rather than disturbance processes.  
(Designing a Geography of Hope, TNC)

**Large patch:** Communities that form large areas of interrupted cover. Individual occurrences of this community patch type typically range in size from 50 to 2,000 hectares (124 to 4,942 acres). Large patch communities are associated with environmental conditions that are more specific than those of matrix communities, and that are less common or less extensive in the landscape. Like matrix communities, large-scale processes also influence large-patch communities, but these tend to be modified by specific site features that influence the community. (Designing a Geography of Hope, TNC)

**Small Patch** - Communities that form small, discrete areas of vegetation cover. Individual occurrences of this community type typically range in size from 1 to 50 hectares (2.5 to 124 acres). Small patch communities occur in very specific ecological settings, such as on specialized landform types or in unusual microhabitats. The specialized conditions of small patch communities, however, are often dependent on the maintenance of ecological processes in the surrounding matrix and large patch communities. In many ecoregions, small patch communities contain a disproportionately large percentage of the total flora, and also support a specific and restricted set of associated fauna (e.g. invertebrates or herptofauna) dependent on specialized conditions.  
(Designing a Geography of Hope, TNC)

**Conservation Targets (targets)** - An element of biodiversity selected as a focus for conservation planning or action. The three principle types of targets for planning projects are species, ecological communities, and ecological systems.  
(Designing a Geography of Hope, TNC) (See Appendix A for more details)

**Connectivity** - Conservation sites or reserves have permeable boundaries and thus are subject to inflows and outflows from the surrounding landscapes. Connectivity in the selection and design of nature reserves relates to the ability of species to move across the landscape to meet basic habitat requirements. Natural connecting features within the ecoregion may include river channels, riparian corridors, ridge-lines, or migratory pathways. (Designing a Geography of Hope, TNC)

**Shifting Mosaic** - An interconnected patchwork of distinct vegetation types that may shift across the land surface as a result of dynamic ecosystem processes, such as periodic wildfire or flooding. (Designing a Geography of Hope, TNC)

**Energy Capture** - From photosynthesis to predation, the ability of target species to meet their needs for food (energy), in all seasons of the year.

**Dispersal-dominated species populations** - Species for which there are suitable habitat patches to support small populations, but the patches are beyond the distance over which individuals can move, or are separated by a matrix that is too hostile to permit movement. (Lambeck, 97)

**Area-limited species** - Species for which the patches of appropriate habitat are simply too small to support a breeding pair, or, in the case of colonial species, a functional social group. Area-limited species are also resource-limited, but they should be considered in this category if the limiting resource is not obvious or quantifiable. Habitat patches are therefore used as a surrogate for resources, and it is assumed that there is a minimum patch size of a given quality that will provide sufficient resources to support a pair or group (Lambeck, 97)

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Considerations for Portfolio Design

Guidelines for Ecoregional Team Leaders

from the Stewardship Expert Team

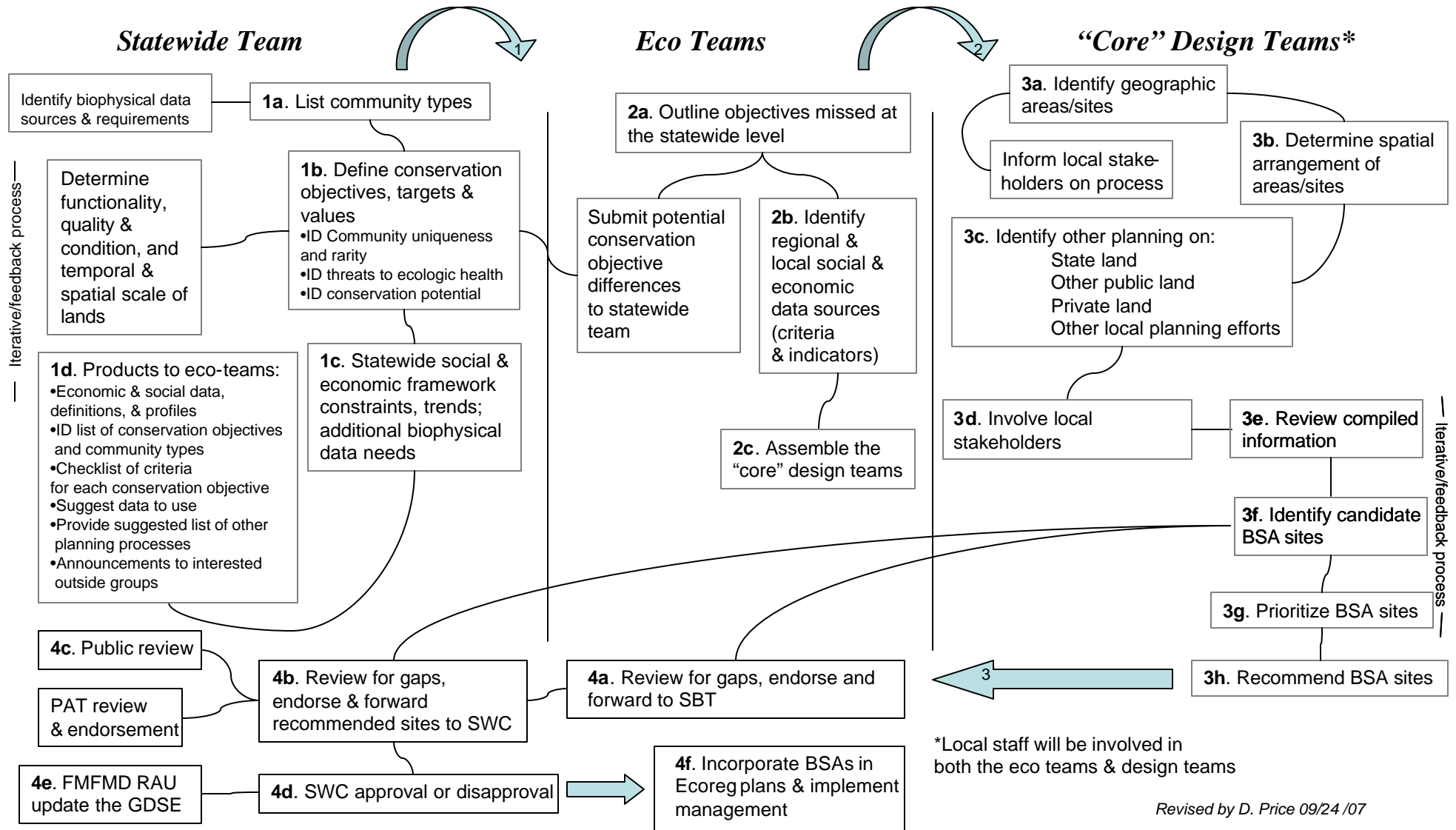
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FUNCTIONAL LANDSCAPES

and the Conservation of Biodiversity

## APPENDIX B - Proposed Selection Process for Parcels for Inclusion in The Biodiversity Conservation Network



## APPENDIX C - BIODIVERSITY STEWARDSHIP AREA SELECTION STEPS

*Last Modified: 10/2/07 by David Price*

These written steps are designed to accommodate the corresponding flow chart that describes the proposed selection process for Biodiversity Conservation lands.

Flow chart box #	Description
<b>1a</b>	<p><u>List community types</u>  For each of the 74 natural community types identified and described by MNFI, identify the general distribution and quantity of each community type exists now and in the past. Define any variation in each community type.  (Datasets needed: MNFI, FIA (IFMAP for state forests), Landsat, Natureserve[TNC] for federal lands)</p> <p><u>Sidebar: Identify biophysical data sources &amp; requirements</u>  Provide sources and directions on how to use these data sources:  MNFI                                      Need:  IFMAP (OI)                              Survey of MNFI  GLO                                        Layer 4 IFMAP (high res cover)  Community abstracts                Private lands—FIA  LTA'S                                      Private lands—aerial photos  Land ownership (GAP)  USFS inventory  Kotar (predictive)  Forest health databases</p>
<b>1b</b>	<p><u>Define conservation objectives, targets &amp; values for each community type</u>  How unique is the specified community type in the state? The country? The world?  How threatened is the community type (statewide land use reports, development pressures, pollution/ environmental damage, potential exotic pest impacts, etc)?  What threatened &amp; endangered species does the community type support? (Datasets needed: MNFI, MIWILD)  What aspects of the community type <i>should</i> be restored, maintained, expanded, or reestablished? (Datasets needed/info needed: MNFI, TNC, USFS, PAT)  What aspects of the community type <i>can</i> be restored, maintained, expanded, or reestablished?  Note: Statewide team must be able to justify direction to ecoteams and others.</p> <p><u>Sidebar: Determine functionality, quality &amp; condition, and temporal &amp; spatial scale of lands</u>  What are the successional stages necessary to functionally maintain the system?  Are these stages currently represented across the landscape?  For each community type, define relative importance of the ecological criteria defined by the Public Advisory Team (e.g. how important are landscape context, block size and connectivity to maintain the conservation objectives in a particular community type?) Use LTAs at the sub-sub section level for widespread community types, may need to use other spatial sources for less common types.  Identify other statewide landowners who may be representing the system.</p>

Flow chart box #	Description
<b>1c</b>	<p><u>Identify statewide social &amp; economic trends and constraints</u>  <u>AND identify additional biophysical data needs</u>  Population: density, seasonal homes, change, proximity to state land.  Employment and earnings: forest products, tourism and recreation, hunting and fishing, mineral, oil and gas, watersheds, special/nontimber forest products.  Areas that are protected under other designations:</p> <ol style="list-style-type: none"> <li>i. Conservation easements</li> <li>ii. TNC or regional land conservancy ownership</li> <li>iii. Natural Rivers</li> <li>iv. Wilderness</li> <li>v. Trail systems</li> <li>vi. Scenic corridors</li> <li>vii. UM BIO Station</li> <li>viii. Dedicated or Proposed Natural Areas</li> </ol> <p>Other forest uses generated locally</p>
<b>1d</b>	<p><u>Provide the following products to eco-teams:</u>  List of conservation objectives associated with each community type  Checklist of ecological criteria important for each conservation objective  Relevant economic &amp; social data, definitions and profiles  Relevant biophysical data  Suggested list of other planning processes to connect with  Announcements to interested outside groups</p>

Opportunities for public participation at the statewide level:

- Establish/maintain web page in “Forests, Land & Water” section of DNR website that lists the history, timeline, supporting documentation and latest happenings. Provide on-line connection to offer comments on the process, including a running summary of all comments for on-line visitors to view.
- Maintain electronic listserv that also provides opportunities for on-line comments, announcements and discussions.
- Update list of organizations and agencies (statewide, regional, and local) who are potentially interested in the Biodiversity Conservation process. Provide executive summary and future intentions to these groups.
- Develop “canned” presentation of Biodiversity Conservation process that can be offered at organizational and agency functions.
- Discuss products from “1d” above and “4b” below with Public Advisory Team.

Flow chart box #	Description
2a	<u>Outline objectives missed at the statewide level</u> Locally identify conservation objectives: How unique is the specified community type in the region? What aspects of the community type <i>should</i> be restored, maintained, expanded, or reestablished? What aspects of the community type <i>can</i> be restored, maintained, expanded, or reestablished? How threatened is the community type (statewide land use reports, development pressures, pollution/ environmental damage, potential exotic pest impacts, etc)? What Threatened & Endangered species does the community type support? Compare locally identified objectives to state-identified objectives for the community type <u>Sidebar: Submit additional local conservation objectives to statewide team</u>
2b	<u>Identify regional and local social &amp; economic data sources</u> Use local social & economic data that augments statewide data to examine local constraints on site selection. Identify criteria & indicators using statewide and local data sources. Resolve any statewide-local conflicts, if any, before proceeding.
2c	<u>Assemble the “core” design teams</u> Identify appropriate number of core design teams within each eco-team (suggested number: 1) Identify local & eco-team staff who will serve on core design teams.

Opportunities for public participation at the eco-team level:

Because the Biodiversity Conservation process is so complex, the eco-team level of public participation could serve as the “education & outreach” level. Efforts can be made to share ecosystem-based concepts and the overall Biodiversity Conservation process with individuals and groups, so that they may make informed contributions at the design team level.

- Update and maintain list of regional organizations and individuals who are interested in the Biodiversity Stewardship process.
- Use regional, modified version of “canned” presentation to deliver to local or regional organizational events.
- Include findings, changes, and recommended Biodiversity sites in compartment reviews and open houses.

Flow chart box #	Description
<b>3a</b>	<u>Identify geographic areas/sites</u> Work with the statewide assist team to locally identify location of target community types, using Phase I analysis, models and public and staff input from Conservation Area Recommendation Forms. Classify those community type locations according to specified conservation objectives <u>Sidebar: Inform local stakeholders on the process:</u> DNR, DEQ, USFS, TNC, MNFI, NRCS, other partners (relatively small group)
<b>3b</b>	<u>Determine spatial arrangement of areas/sites</u> Do the targeted areas meet functionality, quality & condition, and temporal & spatial scale requirements?
<b>3c</b>	<u>Identify other planning on state, other public, and private lands</u> Consider how other planning processes in the local area affect, or are affected by, the Biodiversity Conservation selection process for the community type
<b>3d</b>	<u>Include local stakeholders</u> Identify interested and/or potentially affected local and statewide parties, including: Natural resource organizations/groups U.S. Forest Service MSU Extension, including the Michigan Natural Features Inventory Industry landowners NIPF landowners Local community leaders Involve stakeholders in public processes, including compartment review.
<b>3e</b>	<u>Review compiled information</u> Examine data, maps, etc from local, regional and statewide processes
<b>3f</b>	<u>Identify candidate Biodiversity Stewardship Area (BSA) sites</u> List the sites that meet the agreed-upon criteria using: PAT criteria recommendations Local data and constraints
<b>3g</b>	<u>Prioritize BSA sites</u> Use local design teams to prioritize sites outlined in 3f
<b>3h</b>	<u>Recommend BSA sites</u> Recommend selected BSA locations and acreages to eco- and statewide teams Include recommended management activities to improve or maintain these sites in the specified quality and condition

#### Opportunities for public participation at the design team level:

- Use list of interested parties (compiled by eco-teams) to identify participants for local design teams. Members of the design team should have a basic familiarity with the local area. Strive to maintain a balance of the varying interests. If applicable, use guidelines set for the state-level Public Advisory Team as a model.

#### Other notes/thoughts

- Statewide team will help ecoteams in setting limits. For example, although this was a huge ecological system at one time, we are not trying to re-create that.
- Need to realize this process will change over time. Different matrix 50-100 years into the future.

Flowchart Box #	Description
4a	<u>Ecoteams review for gaps, endorse and forward to Statewide Biodiversity Team</u> Assess whether recommended BSA sites adequately meet ecoregional representation goals at appropriate spatial scales.
4b	<u>Statewide Biodiversity Team review for gaps, endorse &amp; forward recommended sites to Statewide Council (SWC)</u> Assess whether recommended BSA sites adequately meet statewide representation goals at appropriate spatial scales. Coordinate public review of recommended BSA sites.
4c	<u>Public review and Public Advisory Team (PAT) review &amp; endorsement</u> Statewide Biodiversity Team gathers public comments and seek PAT endorsement of recommended BSA sites.
4d	<u>Statewide Council approval or disapproval</u> SWC presented with final recommendation for BSA sites.
4e	<u>FMFMD Resource Assessment Unit update the Geographic Decision Support Environment (GDSE)</u> BSA layer is updated with SWC approved sites and made available to field staff and IFMAP
4f	<u>Incorporate Biodiversity Stewardship Areas (BSAs) in regional plans &amp; implement management</u> Approved BSAs are incorporated into section 5 of Regional State Forest Management Plans. Management prescriptions determined through compartment review process based upon management direction in Regional State Forest Management Plans and applicable Ecological Reference Area (ERA)/High Conservation Value Area (HCVA) management plans.

## **Table of Acronyms**

BCC	– Biodiversity Conservation Committee
BSA	– Biodiversity Stewardship Area
DEQ	– Michigan Department of Environmental Quality
DNR/MDNR	– Michigan Department of Natural Resources
ELU	– Ecological Land Unit
ERA	– Ecological Reference Area
FIA	– Forest Inventory and Analysis
FMFMD	– Forest, Mineral and Fire Management Division
GAP	– The Michigan Gap Analysis Project
GDSE	– Geographic Decision Support Environment
GLO	– General Land Office
HCVA	– High Conservation Value Forest
IFMAP	– Integrated Forest Monitoring, Assessment and Prescription
KW	– Kirtland's Warbler
LP	– Lower Peninsula
LTA	– Landtype Association
MAT	– Michigan Association of Timbermen
MFPC	– Michigan Forest Products Council
MIWILD	– Michigan Wildlife Habitat Database
MNFI	– Michigan Natural Features Inventory
MSU	– Michigan State University
NIPF	– Non-Industrial Private Forest
NRCS	– Natural Resources Conservation Service
OG/BS	– Old Growth/Biodiversity Stewardship
OI	– Operations Inventory
PAT	– Public Advisory Team

RAU – Resource Assessment Unit

RGS – Ruffed Grouse Society

SBT – Statewide Biodiversity Team

SC – Sierra Club

SCA – Special Conservation Area

SWC – Statewide Council

TNC – The Nature Conservancy

TU – Trout Unlimited

UM BIO Station – University of Michigan Biological Station

UP – Upper Peninsula

USFS – United States Forest Service